REMARKS/ARGUMENTS

In the Official Action, on page 2, paragraph 1, claims 2-12, 14, 16-24, 26-28, 30, 31, 34-46, 48, 50, 52-54, 56, 57, 59, and 60 were objected to for failing to include the word "further." In reply, each of claims 2-12, 14, 16-24, 26-28, 30, 31, 34-46, 48, 50, 52-54, 56, 57, 59, and 60 has been amended to insert the word "further" in an appropriate place in the claim.

In the Official Action, on pages 2-3, paragraph 3, claims 1-61 were rejected under 35 U.S.C. 101 as directed to non-statutory subject matter. Applicants respectfully traverse, and request reconsideration in view of the additional evidence submitted herewith and cited on the enclosed Form 1449, and the following remarks and cited legal authority. Applicants have also added new claims 62-73 as suggested in the Official Action.

Support for new claims 62-67 is found in applicants' drawings in FIG. 12 step 116 and in applicants' specification on page 28 lines 1-8. Support for new claims 68-73 is found in applicants' drawings in FIG. 2 (file system cache 51 and messages buffers 53 and file system 54 and log 55 in cached disk array 29) and FIGS. 3 (file system cache 51, file system 54, log 55, uncached multi-threaded write interface 63) and FIG. 5 step 83, and in applicants' specification on page 12 line 19 to page 13 line 5, page 13 lines 11-16, page 13 line 17 to page 14 line 5, and page 17 lines 7-11. Applicants interpret "save" to mean: "To copy or store data from a temporary area, such as RAM, to a permanent medium such as a hard drive or optical disk." (See the enclosed page 680 of the Wiley Electrical and Electronics Engineering Dictionary.) In applicants' preferred embodiment, the file is saved from RAM of the file system cache 51 or the

uncached multi-threaded write interface 63 and message buffers 53 in FIG. 2 and written down to the file system 54 in disk storage of the cached disk array 29.

The Official Action asserts:

(1) "Applicants' claims are processes, ..."

(2) "Applicants' claims ... include a judicial exception therein."

(3) "Upon review of the claims as a whole, there is no transformation ..."

(4) "Upon review of the claims as a whole, ... the claims ... do [not] produce a useful, concrete, and tangible result."

Applicants respectfully disagree, and assert:

(1) Applicants' claims 1 to 32 are statutory process, and claims 33 to 61 are statutory apparatus;

(2) Applicants' claims do not include a judicial exception.

(3) Applicants' claims include a "transformation."

(4) Applicants' claims produce a useful, concrete, and tangible result.

(1) Applicants' claims 1 to 32 are statutory process, and claims 33 to 61 are statutory apparatus;

The Examiner has the burden of showing that there is legal authority for rejection of the applicants'' claims as presented. A claim limited to a machine or manufacture, which has a

practical application, is statutory. In most cases a claim to a specific machine or manufacture

will have a practical application. See Alappat, 33 F.3d at 154, 31 USPQ2d at 1557.

In the present case, the applicants' claims 33 to 61 are limited to a specific machine,

namely a network file server, and the applicants' claims 1 to 32 are limited to a specific process,

namely the operation of a network file server. As evidenced by the numerous references cited by

the Examiner and the applicants, file servers in local area networks and in the Internet have

immense practical application in storing and retrieving data for various applications important to

government, business, and individuals.

Applicant further submit that there is ample legal precedent that claims of the kind

presented by the applicants - defining a data processing machine programmed in a new way to make

the data processing machine more efficient - are directed to statutory subject matter. Some of these

cases explicitly conclude that such a new computer program is not a "mathematical" algorithm. For

example, a conventional digital computer system programmed in a new and unobvious way is

patentable subject matter under 35 U.S.C. § 101 (In re Bernhart, 417 F.2d 1395, 1400, 163 U.S.P.Q.

611, 616 (C.C.P.A. 1969)), a method of operating a digital computer for translation of one natural

language to another is patentable subject matter under 35 U.S.C. § 101 (In re Toma, 575 F.2d 872,

877, 197 U.S.P.Q. 852, 857 (C.C.P.A. 1978) ("[we] are unable to find any direct or indirect

recitation of a procedure for solving a mathematical problem"), a process for converting source

program into object program is patentable subject matter under 35 U.S.C. § 101 (Pardo, 684 F.2d at

916, 214 USPQ at 676: "we are unable to find any mathematical formula, calculation, or algorithm

either directly or indirectly recited in the claimed steps of examining, compiling, storing, and

executing"); a method of reassigning priorities within a computer is statutory subject matter under

35 U.S.C. § 101 (Chatfield, 545 F.2d at 158, 191 USPQ at 736: "[the] independent claims contain neither a mathematical formula nor a mathematical algorithm"); data structure stored on a computer readable medium that increases computer efficiency is statutory subject matter under 35 U.S.C. § 101 (In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994), and a computer having a specific data structure stored in memory is statutory subject matter under 35 U.S.C. § 101 (Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759).

The applicants' method claims should also be considered statutory process in view of the first example of "claimed statutory process" given on page 2100-18 of MPEP Sec. 2106 (Rev. 3, August 2005). This first example is as follows:

> – A computerized method of optimally controlling transfer, storage and retrieval of data between cache and hard disk storage devices such that the most frequently used data is readily available.

(2) Applicants' claims do not include a judicial exception.

In Diamond v. Chakrabarty, 447 U.S. 303, 308-309, 206 U.S.P.Q. 193, 196-197 (1980), the Court held that certain genetically engineered bacterium, that did not exist in nature, were "manufacture" or "composition of matter" within the meaning of §101. The bacterium were capable of breaking down components of crude oil, and therefore had markedly different characteristics from any found in nature. Guided by canons of statutory construction, the Court read the term "manufacture" broadly to mean "the production of articles for use from raw materials prepared by giving to these materials new forms, qualities, properties, or combinations whether by hand labor or by machinery." Similarly, "composition of matter" was construed consistent with its common usage to include "all components of two or more substances and ... all composite articles,

whether they be the results of chemical union, or of mechanical mixture, or whether they be gasses,

fluids, powders or solids." The Court explained the basis of its decision as follows:

> Congress plainly contemplated the patent laws would be given wide scope ...
> The Committee Reports ... inform us that Congress intended statutory
> subject matter to 'include anything under the sun that is made by man.' This
> is not to suggest that §101 has no limits or that it embraces every discovery.
> The laws of nature, physical phenomena, and abstract ideas have been held
> not patentable. (citations omitted.)

Diamond v. Chakrabarty, 447 U.S. 303, 308-309, 206 U.S.P.Q. 193, 196-197 (1980).

In view of Diamond v. Chakrabarty, to establish a prima facie case of non-statutory subject

matter, the Official Action must at least identify a specific one of the subject matter categories that

have been held not patentable. Neither the courts nor the USPTO are at liberty to narrow the scope

of 35 U.S.C. 101. And as noted above, there is legal authority that claims, such as the applicants'

claims, directed to more efficient operation of a programmed data processing device, contain neither

a mathematical formula nor a mathematical algorithm.

(3) Applicants' claims include a "transformation."

The applicants' claims involve a particular kind of data processing machine, known as a

network file server. When responding to request from a network client to write to a file, the file

server "transforms" the file from an original consistent state to a new consistent state. The new

consistent state includes the new data written to the file, and any corresponding change in the

metadata of the file. For example, the present invention is directed to preventing data

consistency problems that might otherwise arise if multiple clients or processes have concurrent

access to read-write files during asynchronous writes. (See applicants' specification, page 3, line 14 to page 4, line 16; page 60 line 14 to page 61 line 5.)

(4) Applicants' claims produce a useful, concrete, and tangible result.

Applicants respectfully submit that their claimed process performed by the network file server upon a file in response to a write request from a client produces a "useful, concrete, and tangible result"; namely, an updated file having a new consistent state. For example, "[f]iles may be retrieved, modified, stored, deleted, or transferred." See the enclosed page 283 of the Wiley Electrical and Electronics Engineering Dictionary.

No legal authority has been found that requires a "final result" or "practical utility" to be expressly recited in the claims. Instead, the "practical utility" requirement of 35 U.S.C. 101 is satisfied if such utility is obvious or if the application as a whole discloses a practical utility for the invention as claimed. Brenner v. Manson, 383 U.S. 519, 148 U.S.P.Q. 689 (1966); In re Brana, 51 F.3d 1560, 1566, 34 U.S.P.Q.2d 1436 (Fed. Cir. 1995) ("The PTO has the initial burden of challenging a presumptively correct assertion of utility in the disclosure. Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility."); Cross v. Iizuka, 753 F.2d 1040; 224 U.S.P.Q. 739 (Fed. Cir. 1985); Kawai v. Metlesics, 480 F.2d 880, 178 U.S.P.Q. 158 (C.C.P.A. 1973).

The Official Action quotes the phrase "useful, concrete, and tangible." This phrase occurs in the following legal authority.

In <u>In re Alappat,</u> 33 F.3d 1526; 31 U.S.P.Q.2d 1545 (Fed. Cir. 2001), the court held that the

following claim was directed to statutory subject matter:

> A rasterizer for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination intensity data to be displayed on a display means comprising:
> (a) means for determining the vertical distance between the endpoints of each of the vectors in the data list;
> (b) means for determining the elevation of a row of pixels that is spanned by the vector;
> (c) means for normalizing the vertical distance and elevation; and
> (d) means for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.

(33 F.2d at 1538-1539).

The court said:

> Although many, or arguably even all, of the means elements recited in claim 15 represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits, the claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. This is not a disembodied mathematical concept which may be characterized as an "abstract idea," but rather a specific machine to produce a useful, concrete, and tangible result.

(33 F.2d at 1544).

In <u>State Street Bank & Trust Co. v. Signature Fin. Group, Inc.</u>, 149 F.3d 1368, 1374-75, 47

U.S.P.Q.2d 1596, 1601-02 (Fed. Cir. 1998), the court held that the following claim was directed to

statutory subject matter:

> 1. A data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising:

(a) computer processor means [a personal computer including a CPU] for processing data;

(b) storage means [a data disk] for storing data on a storage medium;

(c) first means [an arithmetic logic circuit configured to prepare the data disk to magnetically store selected data] for initializing the storage medium;

(d) second means [an arithmetic logic circuit configured to retrieve information from a specific file, calculate incremental increases or decreases based on specific input, allocate the results on a percentage basis, and store the output in a separate file] for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds, [sic, funds'] assets and for allocating the percentage share that each fund holds in the portfolio;

(e) third means [an arithmetic logic circuit configured to retrieve information from a specific file, calculate incremental increases and decreases based on specific input, allocate the results on a percentage basis and store the output in a separate file] for processing data regarding daily incremental income, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;

(f) fourth means [an arithmetic logic circuit configured to retrieve information from a specific file, calculate incremental increases and decreases based on specific input, allocate the results on a percentage basis and store the output in a separate file] for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and

(g) fifth means [an arithmetic logic circuit configured to retrieve information from specific files, calculate that information on an aggregate basis and store the output in a separate file] for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.

(149 F.3d at 1371-72.) The court said:

Today, we hold that the transformation of data, representing discrete dollar amounts by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"--a final share price momentarily fixed for recording and reporting

purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

(149 F.3d at 1373.)

In AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 U.S.P.Q.2d 1447 (Fed. Cir. 1999), the court held that the following claim was directed to statutory subject matter:

A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:

generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and

including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

(172 F.3d at 1354.) The court said:

In this case, Excel argues, correctly, that the PIC indicator value is derived using a simple mathematical principle (p and q). But that is not determinative because AT&T does not claim the Boolean principle as such or attempt to forestall its use in any other application. It is clear from the written description of the '184 patent that AT&T is only claiming a process that uses the Boolean principle in order to determine the value of the PIC indicator. The PIC indicator represents information about the call recipient's PIC, a useful, non-abstract result that facilitates differential billing of long-distance calls made by an IXC's subscriber. Because the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101. See Arrhythmia Research Tech. Inc. v. Corazonix Corp., 958 F.2d 1053, 1060, 22

U.S.P.Q.2D (BNA) 1033, 1039 (Fed. Cir. 1992) ("That the product is numerical is not a criterion of whether the claim is directed to statutory subject matter.").

(172 F.3d at 1358.)

Thus, the above cases referring to "useful, tangible and concrete" do not stand for the proposition that claims are directed to a non-statutory subject matter if they are not directed towards the final result that is useful, tangible and concrete. Instead, these cases stand for the proposition that a claim otherwise directed to a "mathematical" algorithm is directed to patentable subject matter if the claimed subject matter as a whole constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result.

The process recited in applicants' claims produces a modified file, and this modified file is a useful, concrete and tangible result. The authority cited above indicates that the practical application need not be explicitly recited in the claims, and instead can flow inherently from what is recited in the claims, from what is disclosed in the applicants' specification, and from what is obvious to a person of ordinary skill.

The recitations in the applicants' claims are neither abstract nor unpredictable in operation or result. See In re Angstadt, 537 F.2d 498, 508, 190 U.S.P.Q. 214 (C.C.P.A. 1976)("In cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws."). The recitations in the applicants' claims are not merely abstract ideas constituting disembodied concepts or truths.

Thus, the applicants' claims explicitly recite a practical application (a network file server or method of operation thereof), and a result (write access to a file) that is concrete, useful and tangible. For example, in applicants' claim 1, a network file server is operated for providing clients with concurrent write access to a file. The network file server responds to a concurrent write request from a client by: (a) obtaining a lock for the file; and then (b) preallocating a metadata block for the file; and then (c) releasing the lock for the file; and then (d) asynchronously writing to the file; and then (e) obtaining the lock for the file; and then (f) committing the metadata block to the file; and then (g) releasing the lock for the file.

The Official Action says that the claims lack reciting or suggesting that the released or committed file is saved for further use. However, claims 17-21, 25-28 and 51-54 are very specific as to where the file system resides and how and where file data is saved in the network file server.

The Official Action suggests that the applicants' claimed process does not produce a tangible result because the user is not made aware of the release or commit. However, the network client need not be made aware of the release or commit in order for the network client or other network clients to manipulate the file further for specific useful applications. The client can simply send another request for access to the file to the network file server, and that subsequent read or write request will be processed upon completion of the prior request.

It also has been common knowledge since ancient times that if there is a sufficient likelihood that a request will be executed, then there is no need for returning an acknowledgement of execution of the request. Specifically, an important aspect of the art of war has been ensuring that orders of a commander will be followed with a high degree of certainty,

especially when the army is under attack. See, for example, Sun Tzu, Art of War, Chapter I paragraphs 1-5, Chapter XI paragraphs 1 and 20-25. In a similar fashion, an asynchronous remote data mirroring or file replication facility for protection from a disaster such as a terrorist attack does not wait for or require return of acknowledgements of writes or commits of the replicated data to files at the remote location. In this fashion, long distance replication does not cause production application latency. See, for example, Global Recovery Demonstration: SRDF/A and PRIMECLUSTER - EMC Remote Data Facility/Asynchronous, Fujitsu Siemens Computers PRIMECLUSTER, pages 3 and 8.

The Official Action suggests that the applicants' claimed process does not produce a tangible result because the claims fail to recite that the release/commit file is saved. However, there are many useful applications that do not require the release/commit file to be saved. For example, so-called temporary files can be located in memory. See page 780 of the Wiley Electrical and Electronics Engineering Dictionary. It is also well known that the writing of data to sufficiently redundant random access memory can be treated as if the data were saved to disk storage. This is called a "fast write" capability. See Beale et al., U.S. 5,155,845, col. 12 line 51 to col. 13 line 24.

In short, the applicants' claims produce a "useful, concrete, and tangible result" regardless of whether an acknowledgement of the write or commit is returned to the network client, regardless of whether the modified file is saved, and regardless of whether the modified file is ever accessed again. For example, by asynchronous remote copy of temporary as well as saved files from a primary site to a remote site, real-time operations such as financial transactions can be resumed at the remote location shortly after destruction of the primary site in

the event of a natural disaster or terrorist attack. Moreover, fail-over of data processing operations to remote sites were instrumental in the business continuity of financial firms struck by the 9/11/2001 terrorist attack on the World Trade Center. See, for example, the enclosed Edward Cone, "Cantor Fitzgerald - Forty-Seven Hours," <u>Baseline Magazine</u>, Oct. 29, 2001, and the other documents submitted herewith and cited on the enclosed Form 1449.

In view of the above, it is respectfully submitted that the application is in condition for allowance. Reconsideration and early allowance are earnestly solicited.

Respectfully submitted,

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